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ABSTRACT

This longitudinal study investigated the loss of Education Consolidation Improvement Act Chapter 1 services and its effect on student achievement in Austin Independent School District schools desegregated by court order through school pairing or revision of school attendance boundaries. The achievement of two groups of kindergarten through third grade students served by Title I prior to desegregation was measured across four years. Chapter 1 replaced Title I, but is the same program. One group was students remaining in TItile I/Chapter 1 schools, the other was students reassigned to non-Title I/Chapter 1 schools. Achievement was measured by 1980 Reading Total grade equivalent scores on the Iowa Test of Basic Skills. The 1980 pre-reading composite score on the Metropolitan Readiness Tests was used for the kindergarten pretest. Analyses showed students in the non-Chapter 1 schools had equal or higher posttest scores than students with the same pretest scores in Chapter 1 schools. Findings also: (1) support research suggesting beneficial effects for economically disadvantaged students in attending schools with larger percentages of economically advantaged students; and (2) indicate that the current method for selecting Chapter 1 schools has some utility. (BS)

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Does Pairing Schools Hurt Chapter 1 Students?

Objectives

This study was intended to answer two questions. First, does pairing of schools or revising school attendance boundaries for the purpose of desegregating schools result in a loss of Chapter 1 services to some schools because of legal requirements concerning how schools are selected for service? Second, if this does occur, does the loss of Chapter 1 services to students in those schools hurt the achievement of those students?

Background

When the Austin Independent School District was forced by court order to desegregate in the fall of 1981, "pairing" was the primary method used to desegregate the elementary schools. Pairing is a technique used to desegregate school systems which involves combining the attendance areas from two or more schools. Usually, all students from the combined attendance areas attend one school for certain grade levels, and then attend the other school for the remaining grade levels. In Austin, in addition to pairing schools, some boundary lines were redrawn to reassign students to other schools in an effort to create more racially balanced schools. The effect of redrawing the attendance boundary lines on the racial and economic balance of the schools was similar to but generally less radical than was the effect of pairing.

Potential Problem

ECIA Chapter 1 regulations (and the previous Title I regulations) require that school districts place Chapter 1 services in schools whose attendance areas have the largest number or percentage of low-income students residing within them. When attendance areas for predominantly minority, low-income schools are paired with attendance areas from predominantly white, middle-income areas, the percentage or number of low-income students may be lower for each area than it was previously for the predominantly minority schools. Figure 1 shows an example of this phenomenon. In some districts where this occurs, Chapter 1 resources might simply be extended to include more schools, up to the maximum permitted by federal regulations, in order to allow schools that have traditionally received Chapter 1 services to continue receiving them. However, there are at least two cases in which formerly Chapter 1 schools are likely to lose all Chapter 1 services:

1) if the maximum number of schools that could be served by Chapter 1 in that district were already being served by the program prior to desegregation, or

2) if there are some schools that were almost eligible for Chapter 1 services prior to desegregation and these schools are not included in the pairing for desegregation (perhaps because they are naturally integrated.)

Figure 2 shows an example of these two instances. Because the selection of schools for Chapter 1 service depends on the percentage or number of low-income students residing in each attendance area, the problem of high or middle-income parents withdrawing their children from public schools in order to enroll them in private schools does not restore Chapter 1 service to schools within a particular attendance area. Even though the higher-income students attend a private school, they are counted in the total number of students residing in that area, and their numbers affect whether or not that school receives Chapter 1 services.

Based on current Chapter 1 regulations, it obviously a mathematical possibility for schools to lose Chapter 1 services due to a district's implementation of a desegregation plan that involves pairing of schools. However, it was unclear whether or not the loss of Chapter 1 services would be likely to occur in real life and whether or not it would be harmful to the students if it did occur. One perspective from recent reserch suggests that attending a school with a larger percentage of middle- to high-income students can be a major predictor of higher achievement for individual students, even though they may be low-income students (White, 1982). Also, classes that are heterogeneous in student ability levels can facilitate the learning of low-achieving students, according to some studies (Beckerman & Good, 1981). Thus, there are some positive effects of pairing schools that might be expected to offset the loss of Chapter 1 services for disadvantaged students.

Austin's Experience

As a result of the pairing of attendance areas due to the desegregation plan, several schools that had traditionally received Title I services were no longer eligible to receive them. The exact number of schools to lose Chapter 1 services that they would have received (without pairing)has varied from year to year since desegregation was first implemented in 1980, as a result of variations in program funding levels and shifting residential patterns. Approximately six schools an the students within those schools lost Chapter 1 services the first year of desegregation, but several hundred additional former Title I

Figure 1

Results of Pairing a Traditional Title I School
With a Predominantly Middle- To Upper-Income School

Before

	School A (traditionally Chapter 1)		School B	
grade	# students	# low-income	# students	# low-income
K	100	70	100	10
1	100	70	100	10
2	100	70	100	10
3	100	70	100	10
4	100	70	100	10
5	100	70	100	10
6	100	70	100	10
Total	700	490 (70%)	700	70 (10%)

After

K	100	70	100	10
1	200	80	-	-
2	200	80	-	-
3	200	80	-	-
4	-	-	200	80
5	-	-	200	80
6	-	-	200	80
Total	700	310 (44%)	700	250 (36%)

Note: Calculations assume kindergarten students remain in their neighborhood schools, which was the case in Austin.

Figure 2

Effect on "Ranking" of Schools for Chapter 1
Service When Pairing of Schools Occurs

School (N= 700 per school)	Student Populations			
	Before		After	
	# (Low-income)	%	# (Low-income)	%
(PAIRED) A * © #	490	70%	310	44%
(PAIRED) B #	70	10%	250	36%
C * <	420	60%	420	60%
D <	350	50%	350	50%

* School served by Chapter 1 before pairing.

© School lost service due to pairing.

After desegregation plan is implemented, school contains students that lost Chapter 1 service due to pairing.

< School not involved in pairing, served by Chapter 1 after the pairing.

students bused to the other half of many "pairs" of schools also lost the services. In subsequent years, most of the traditionally Title I schools that lost services became Chapter 1 schools again because of changing housing patterns, although the 'pair' of traditional Title I school usually did not become a Chapter 1 school. (Apparently, some parents of white, middle-income students moved away from areas that would require busing their child to a traditionally Title I school, but more often remained in their original neighborhood if their chidren were of an age/grade level that allowed them to attend the paired school in their neighborhood.) Thus, in Austin at least, there was a real reason for concern about the students who would no longer receive the Chapter 1 services.

Another concern was that an examiniation of achievement gains for students during the first year of desegregation might be misleading -- perhaps negtively affected by the disruption or positively affected by a so-called Hawthorne effect. Thus, a longitudinal approach to the question of "did desegregation hurt or help?" seemed important.

Decription of the Study

Briefly, this study was a four-year longitudinal look at students who were served by Title I prior to a court-ordered desegregation plan. (Chapter 1 replaced Title I during the first year of desegragation; the program was the same, only the name was different.) The achievement of two groups of elementary school students was measured across the four years of the study. The two groups were:

- 1979-80 Title I students in grades K-3 who remained in a Title I/Chapter 1 school for each of the following three school years, and
- 1979-80 Title I students in grades K-3 who were reassigned to non-Title I/Chapter 1 schools for each of the following three school years.

The major question to be answered by the analyses concerned the rate of achievement gains for students in the two types of schools. Did students who had the same pretest score before desgregation have different posttest scores as a result of being assigned consistently to either of the two types of schools? Regression was the method of analysis chosen to answer this question.

Posttest achievement of the students was measured by their 1983 Reading Total grade equivalent scores on the Iowa Tests of Basic Skills. Pretest achievement was measured by the spring, 1980 Reading Total grade equivalent except for grade K, which

used the fall 1980 pre-reading composite score on the Metropolitan Readiness Tests. Austin I.S.D. uses a testing code for "special cicumstances" that may indicate an invalid test score, possibly due to illness, cheating. marking randomly, etc. When the teacher administering the test marked the special circumstances code for either the pre- or posttest, that student was omitted from the analyses.

The major analyses consisted of a series of regression model comparisons. The comparisons were intended to answer the following questions:

- Is the relationship between the pre- and pottest linear or curvilinear? (The relationship between pre- and posttest scores is not always a linear one.)
- If the relationship is curvilinear, is the degree of curvilinearity the same for each group?
- Are the regression lines for each group parallel or do they have different slopes? (Unequal slopes would indicate that the effect of being in different types of schools was different for students with different pretest levels, resulting in an aptitude x treatment interaction.)
- If the regression lines are parallel, are the lines the same, or do they have different intercepts? (In other words, is there a "main effect" for the variable of school type?)

Results

The analyses indicated a significant difference between the groups at three of the four grade levels, although the specific pattern of differences varied slightly at each grade level as shown in figures 3 - 5. No significant difference between the groups was found for the students who were in grade 3 in 1979-80 (the year before desegregation.) For the other grade levels (K-2 for 1979-80), students who were reassigned to schools without Chapter 1 services scored significantly higher on the posttest than did students with the same pretest scores who remained in schools with the Chapter 1 services.

Several possible confounding variables may come to mind. Were the Chapter 1 schools somehow poorer in terms of staff quality? Probably not, since approximately one-half of the teachers in both types of schools (Chapter 1 and non-Chapter 1) were reassigned from the paired school, and this reassignment was made for entire grade levels of staff. Thus, students in a non-Chapter 1 school were probably as likely to have teachers from their old Chapter 1 school as were students who remained in a

Chapter 1 school.

Were the students who attended non-Chapter 1 schools receiving help from a state-funded compensatory program that operated (somewhat ineffectively, according to the evaluation data) in some of those schools? The analyses were repeated and students who were served by the state-funded program were omitted. The results were essentially the same-- students in the non-Chapter 1 schools had equal or higher posttest scores than did students in Chapter 1 schools who had the same pretest score.

Three major points emerge from this study. The first is that pairing of schools and subsequent loss of Chapter 1 service did not detrimentally affect former Title I students. The second is that the study lends further support to research which suggests that attending schools with a larger percentage of middle- to high-income students and heterogeneous classes is beneficial to disadvantaged students. Finally, it indicates that the current method for selecting Chapter 1 schools has some utility. If the additional benefits for disadvantaged students of attending a desegregated, economically heterogeneous school are sufficient to outweigh the negative effects of losing the Chapter 1 services, then those schools which were close to qualifying for Chapter 1 service prior to pairing of the Chapter 1 schools may be in greater need of the services. One caveat: in Austin, the degree of "white flight" to private schools was less severe than in some other parts of the country. If more high and middle-income students in the non-Chapter 1 schools had enrolled in private schools, there might have been insufficient numbers of them left in the schools to balance the loss of Chapter 1 services.

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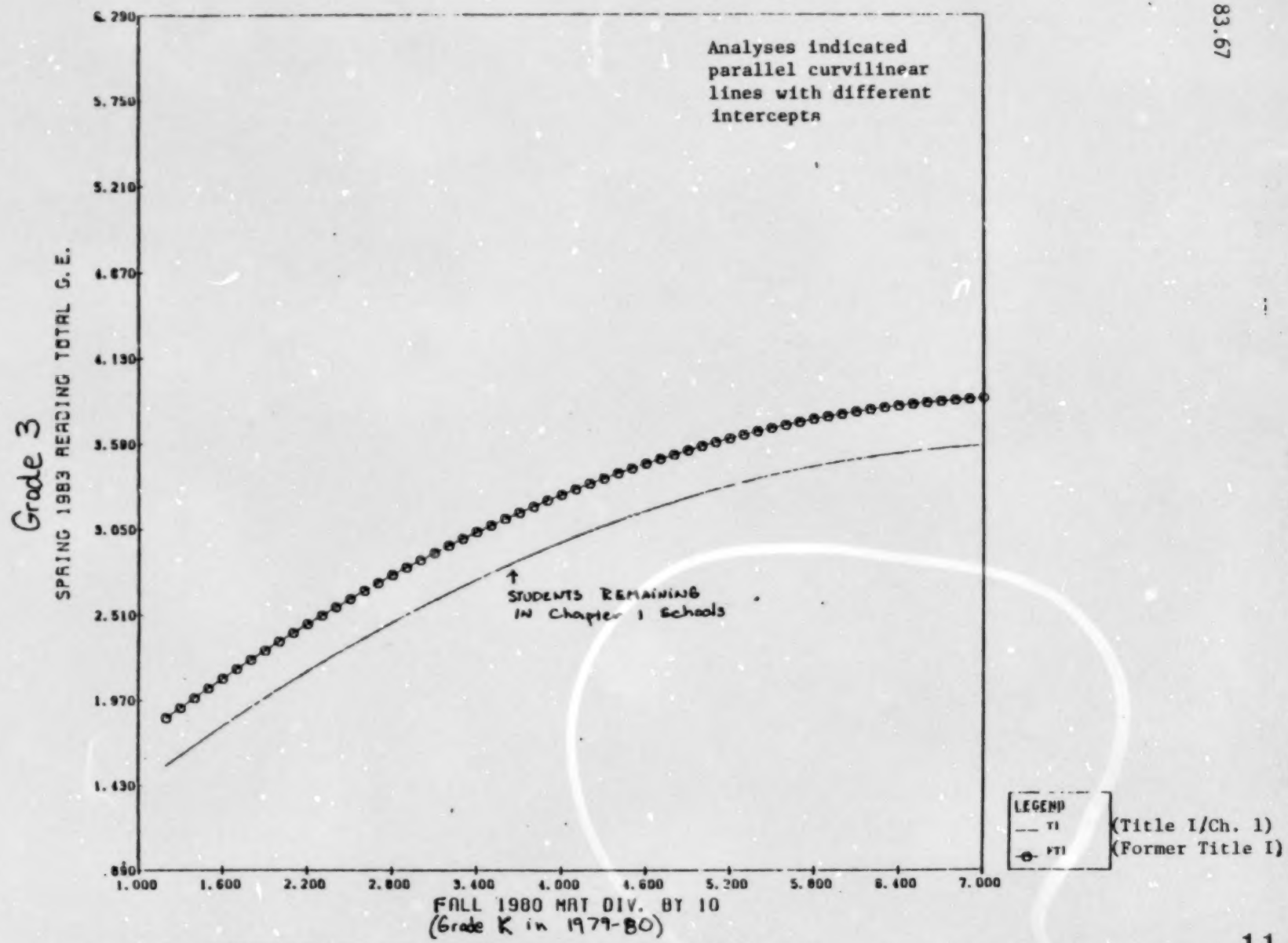

Figure 3. REGRESSION LINE FOR 1979-80 TITLE I STUDENTS WHO REMAINED IN TITLE I SCHOOLS OR WHO WERE REASSIGNED TO NON-TITLE I SCHOOLS FOR THE SUBSEQUENT THREE YEARS

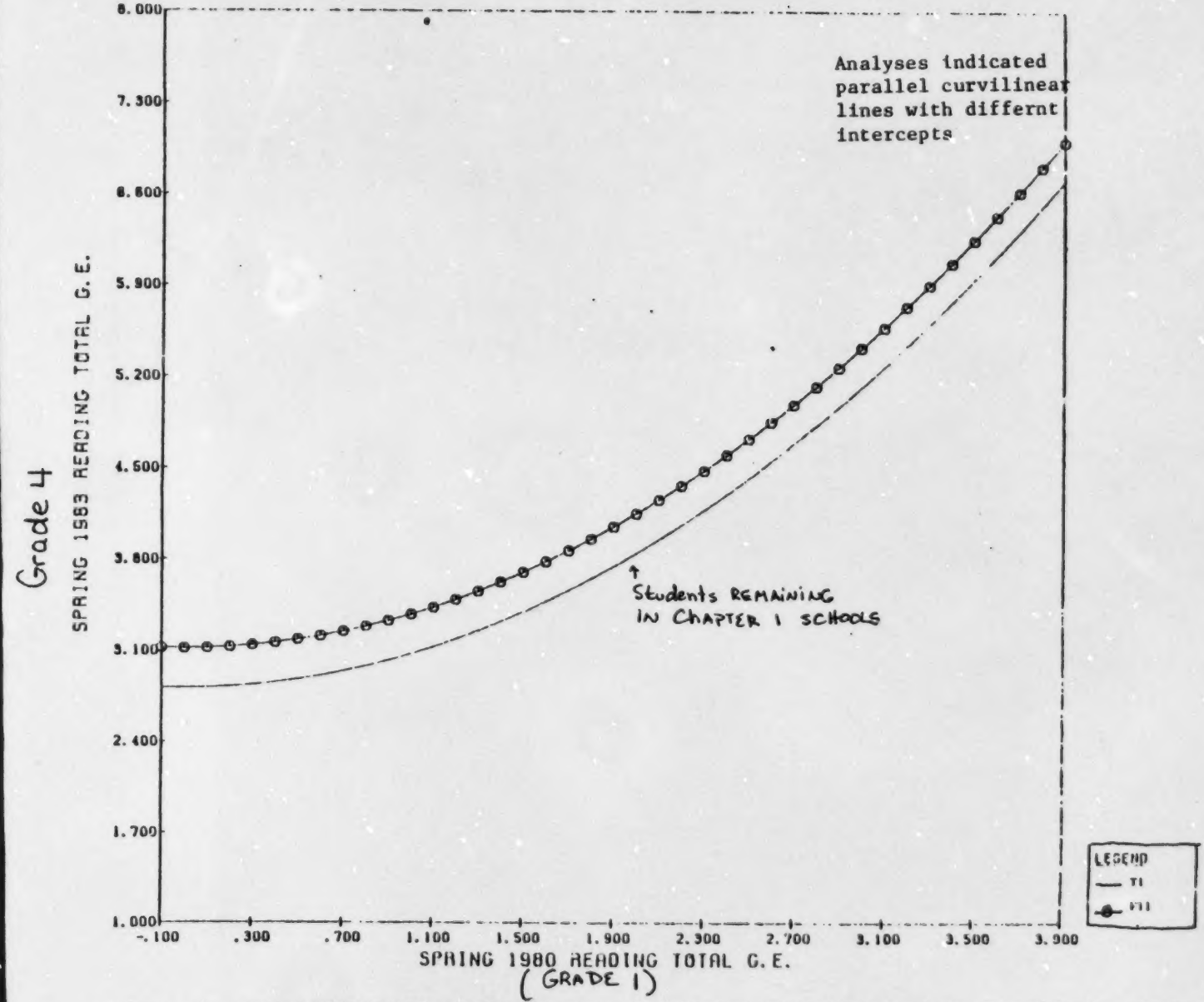

Figure 4. REGRESSION LINE FOR 1979-80 TITLE I STUDENTS WHO REMAINED IN TITLE I SCHOOLS OR WHO WERE REASSIGNED TO NON-TITLE I SCHOOLS FOR THE SUBSEQUENT THREE YEARS.

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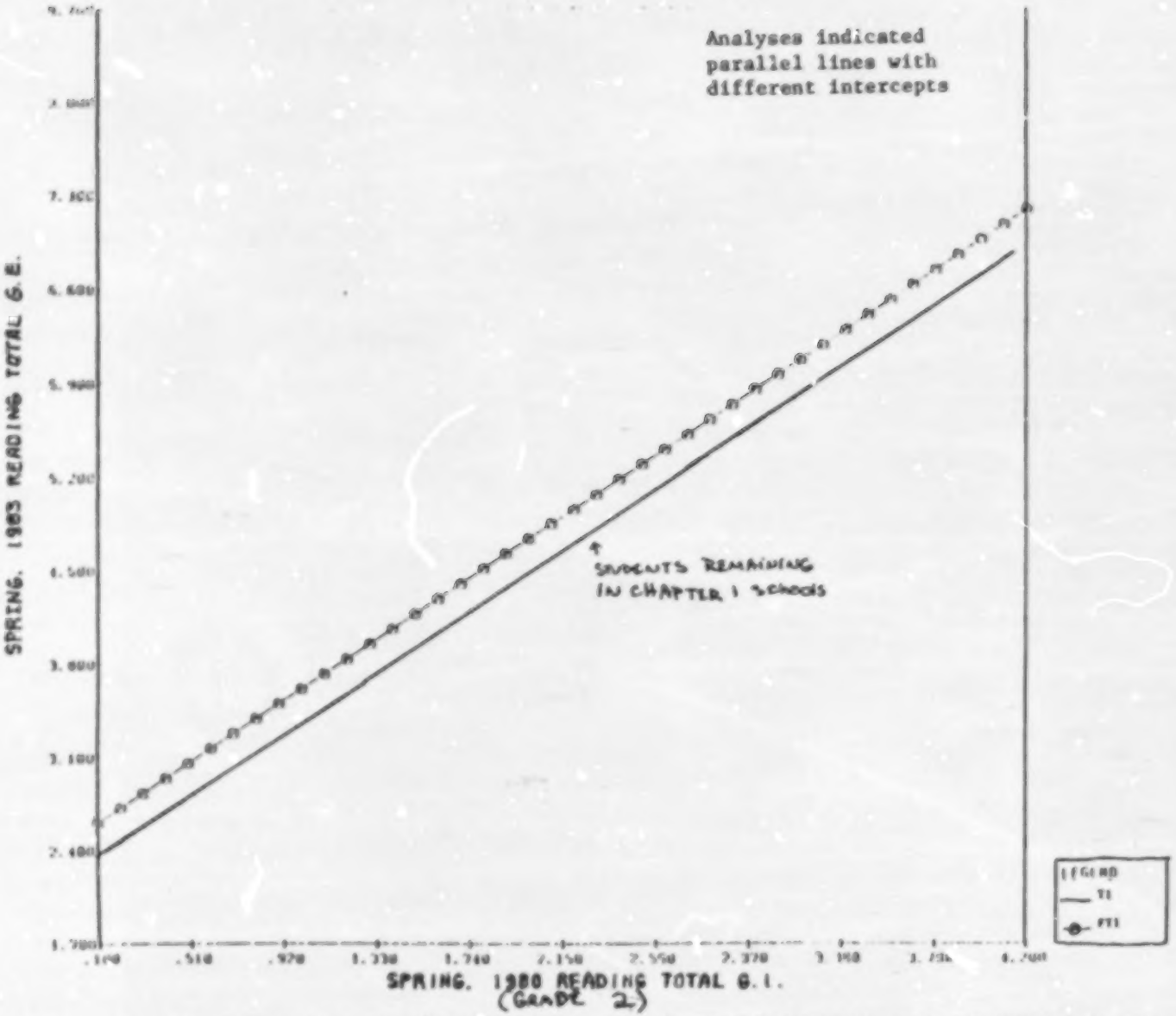

Figure 5. REGRESSION LINE FOR 1979-80 TITLE I STUDENTS WHO REMAINED IN TITLE I SCHOOLS OR WHO WERE REASSIGNED TO NON-TITLE I SCHOOLS FOR THE SUBSEQUENT THREE YEARS.

Models Used in Regression Analyses

Variables

U = Unit vector

1 = posttest

2 = pretest

3 = pretest if group 1; 0, otherwise

4 = pretest if group 2; 0, otherwise

5 = pretest squared (variable 2 squared)

6 = variable 3 squared

7 = variable 4 squared

8 = 1 if group 1; 0, otherwise

Models		Comments
Model 1	1 = U + 3 + 4 + 6 + 7 + 8	Allows independent curvilinear regression lines.
Model 2	1 = U + 3 + 4 + 5 + 8	Requires quadratic component of lines to be equal for each group. Intercepts may differ.
Model 3	1 = U + 2 + 5 + 8	Requires parallel curvilinear regression lines. Intercepts may differ.
Model 4	1 = U + 2 + 5	Requires parallel curvilinear regression lines with common intercept.
Model 5	1 = U + 3 + 4 + 8	Allows independent (different) linear (straight line) regression lines.
Model 6	1 = U + 2 + 8	Requires common linear slopes; and intercepts may differ.
Model 7	1 = U + 2	Requires common linear slopes and common intercepts.

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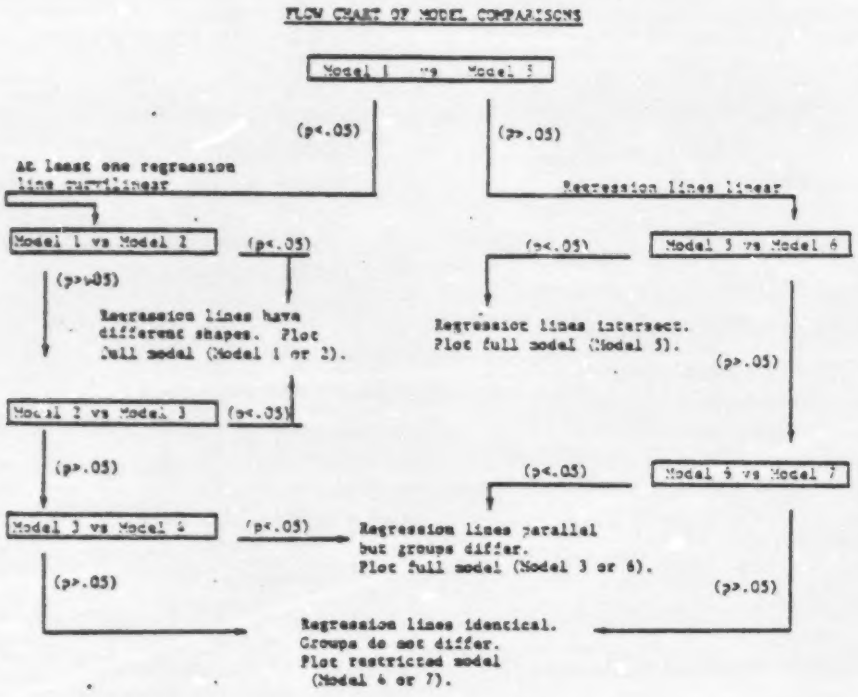

Calculation of F for Model Comparisons

$$F = \frac{(ESS_r - ESS_f)/df_1}{ESS_f/df_2}$$

Where

ESS_r = residual sum of squares for the model with fewer predictors (restricted model).

ESS_f = residual sum of squares for the model with more predictors (full model).

df_1 = the number of independent predictor vectors in the full model minus the number in the restricted model.

df_2 = the number of cases minus the number of independent predictors in the full model.